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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
09/341,196	07/06/99	DESOUSA	S	1103326-0571

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WHITE & CASE
1155 AVENUE OF THE AMERICAS
NEW YORK NY 10036-2787

EXAMINER	
GABEL, G	
ART UNIT	**PAPER NUMBER**
1641	3

DATE MAILED: 08/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/341,196	Applicant(s) Desousa et al.
	Examiner Gailene R. Gabel	Group Art Unit 1641

☒ Responsive to communication(s) filed on *Jul 6, 1999*

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-9* is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-5* is/are rejected.

☒ Claim(s) *6-9* is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *3*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in India on 5/15/98. It is noted, however, that applicant has not filed a certified copy of the application 1019/MAS/98 as required by 35 U.S.C. 119(b).

Specification

2. **Content of Specification**

(a) **Title of the Invention**: See 37 CFR 1.72(a). The **title** of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive, preferably from two to seven words.

(b) **Brief Description of the Drawings**: A **title** referencing the drawings should be placed in page 9, line 3 before the actual description of the Figures as set forth in 37 CFR 1.74.

© **Detailed Description of the Invention**: A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately and should also be **titled**.

Claim Objections

3. Claims 6-9 are objected to under 37 CFR 1.75© as being in improper form as multiple dependent claims because a multiple dependent claim cannot be dependent upon another multiple dependent claim. Accordingly, claims 6-9 have not been further treated on the merits.

Claim Rejections - 35 USC § 112

4. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim 2 is indefinite in reciting "UDP". Acronyms or abbreviations must be recited at least one time in a set of claims.

Claims 2 is incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. It is unclear as recited how "detecting peptidoglycan synthesis" is effected by merely "measuring light energy".

Claim 2 is confusing in reciting "a source of ..." first to eighth occurrences because it is unclear which limitation, i.e. the "source" or the element following the term "source", is a part of the claimed invention. See MPEP § 2173.05(d).

Claim 3 has improper antecedent basis problem in reciting "An assay according to claim". Change to --The assay according to claim-- for proper antecedent basis. See also claims 4 and 5.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elhammer et al. (WO 96/15258) in view of Mengin-Lecreaux et al. (Journal of Bacteriology, August 1991) and Kohlrausch et al. (Journal of Bacteriology, June 1991).

Elhammer et al. disclose an assay, specifically Scintillation Proximity Assay for the detection of peptidoglycan (reaction products) (see page 4, lines 5-11). The assay comprises

incubation of reaction mixture containing the cellular membrane preparation with radiolabelled UDP-N-GalNAc and an intact acceptor protein or synthetic peptide (see page 3, lines 18-30). Elhammer et al. disclose adding a divalent metal ion chelator such as EDTA into the reaction mixture to quench the reaction (see Examples 1 and 2 in pages 14 and 15). Elhammer et al. further disclose adding lectin-coated scintillation proximity beads into the reaction mixture wherein enzymatic transfer measurement is effected by measuring energy emitted by the radioactivity label (see page 4, lines 10-17 and page 8, line 30 to page 9, line 7). Elhammer et al. disclose that N-acetylgalactosamine (Gal-NAc) transferase enzyme is a cellular membrane enzyme that catalyzes the reaction that transfers Gal-Nac from the nucleotide sugar, UDP- N-acetylgalactosamine ((uridine 5-diphosphate) UDP-N-GalNAc) to amino acid residues on the acceptor polypeptide (see page 2, lines 10-16).

Elhammer et al. fail to disclose specifically incorporating elements such as divalent metal ions, undecaprenyl phosphate, peptidoglycan, translocase, transglycosylase, transpeptidase, and lipid phosphorylase as well as UDP-N-acetylglucosamine (GlcNAc) and UDP-N-acetylmuramylpentapeptide (MurNAc) into a reaction mixture for the purpose of forming peptidoglycan. However, such elements inherently exist interactively and cooperatively as building blocks necessary for the formation of bacterial cellular membrane, i.e. necessary for the synthesis of peptidoglycan and therefore, detection thereof, requires the presence of all necessary structures and elements so as to enable peptidoglycan formation. Consequently, absence of

detection which reflects lack or inhibition of biosynthetic activity in the reaction mixture is effected by lack/inhibition of all required elements necessary for the synthesis.

Alternatively, Mengin-Lecreaux et al. teach that Escherichia coli murG gene codes for the UDP-N-Acetylglucosamine:N-Acetylmuramyl-Pentapeptide Pyrophosphoryl-Undecaprenol N-Acetylglucosamine transferase involved in the membrane steps of peptidoglycan synthesis. Specifically, Mengin-Lecreaux et al. analyzed activity of peptidoglycan precursors and determined the levels of translocase and transferase activities in membranes using crude extracts from strains of E. coli (see pages 4628 and 4633). In cell fractionation experiments, Mengin-Lecreaux found that transferase is essentially associated with membranes and that inhibition of peptidoglycan synthesis occurs after the formation of cytoplasmic precursors (see Abstract).

Kohlrausch et al., likewise, teach that peptidoglycan synthesis (formation of bacterial cell walls) occurs by prefabrication of soluble activated precursors: UDP-N-acetylglucosamine, UDP-N-acetylmuramyl-L-alanyl-D-glutamyl-m-diaminopimelyl-D-alanyl-D-alanine (UDP-MurNAc-pentapeptide) in the cytoplasm of bacterial cells such as E. coli. These are then translocated onto a lipid carrier, undecaprenyl-phosphate in the cytoplasmic membrane (see page 3425, column 1 and page 3428, column 1). Kohlrausch et al. also teach that certain test compounds such as penicillin, D-cycloserine, and Moenomycin, act as antagonists to murein synthesizing enzymes which consequently lyse the cell wall structure (see Abstract and pages 3425, 3426, and 3428) .

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated bacterial cell membranes which inherently and normally include

the elements recited in claim 2, step (1) as were shown in the teachings of Mengin-Lecreaux and Kohlrausch in their studies of peptidoglycan synthesis for the purpose of detecting enzymatic activity using scintillation proximity assay such as taught by Elhammer because each element is indeed necessary for peptidoglycan synthesis and subsequent detection, thereof.

7. No claims are allowed.

Remarks

8. Prior art made of record are not relied upon but considered pertinent to the applicants' disclosure:

Men et al. (J. Am. Chem. Soc., February 1998) teach substrate synthesis and activity assay for murG.

Cook (Drug Discovery, July 1996) teaches commercial availability of wheatgerm lectin for use in scintillation proximity assays.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gailene R. Gabel whose telephone number is (703) 305-0807. The examiner can normally be reached on Monday to Friday from 7:00 AM to 4:30 PM. The examiner can also be reached on alternate Fridays at 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le, can be reached on (703) 305-3399. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

8/24/00

Gailene R. Gabel
Patent Examiner
Art Unit 1641

LONG V. LE
SUPERVISORY PATENT EXAMINER
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